

IN THE SPECIFICATION:

Insert the following new heading between lines 1 and 2 of page 1:

Field of the Invention

Paragraph beginning at line 2 of page 1 has been amended as follows:

The present invention relates to a near-field optical head for recording/reading information on a recording medium by utilizing the interaction of a near field light, and to a method for fabricating the same.

Insert the following new heading between lines 5 and 6 of page 1:

Background Information

Paragraph beginning at line 24 of page 4 has been amended as follows:

The present invention has been achieved to overcome ~~invented in the light of the foregoing~~ problems ~~as set forth~~ in the conventional art. It is an object of the invention to provide a method for forming an optical aperture easily and economically.

Paragraph beginning at line 3 of page 5 has been amended as follows:

The method for producing the optical aperture according to the invention comprises the steps of providing ~~with respect to~~ an object having a substrate, an ~~for~~ aperture ~~formation~~ having a tip of conical or pyramidal shape, a stopper having almost the same height as that of the tip, and an opaque film formed on the tip, and displacing a pressing body having approximately a planar part covering the tip and at least a part of the stopper by a force having a component toward the tip to form an aperture on the point of the tip.

Paragraph beginning at line 11 of page 5 has been amended as follows:

Additionally, the method for producing the optical aperture according to the invention comprises the steps of providing ~~with respect to~~ an object having a substrate, for aperture ~~formation~~ having a tip of conical or pyramidal shape, a stopper having almost the same height as that of the tip, and an opaque film formed on the tip, and displacing a pressing body having a planar part to come into contact with the tip and at least a part of the stopper in the direction toward the tip to form an aperture on the point of the tip.

Paragraph beginning at line 20 of page 6 has been amended as follows:

Besides Furthermore, the near field optical head is characterized in that the tip and the stopper are made of the same material.

Paragraph beginning at line 20 of page 8 has been amended as follows:

Besides Furthermore, the aperture formation mechanism also serves as the distance-control mechanism.

Heading at line 10 of page 12 has been amended as follows:

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT
EMBODIMENTS

Paragraph beginning at line 15 of page 12 has been amended as follows:

The method for forming the aperture of the invention will be described referring to Figs. 1 to 3. Fig. 1 is a cross-sectional diagram showing a schematic configuration of the an object or work 1000. As shown in the drawing, the work 1000 comprises a transparent layer 5 formed on a substrate 4, a tip of conical or pyramidal shape 1 and a ridge-shaped stopper 2 formed on the transparent layer 5, and an opaque

film 3 formed on the tip 1, the stopper 2 and the transparent layer 5. Additionally, the transparent layer 5 is not necessarily needed here; in that case, the opaque film 3 is formed on the tip 1, the stopper 2 and the substrate 4. Furthermore, the opaque film 3 may be deposited only on the tip 1.

Paragraph beginning at line 8 of page 14 has been amended as follows:

Fig. 2 depicts a diagram illustrating a state in which the opaque film 3 on the tip 1 is being plastically deformed in the method for forming the aperture. A plate 6 is placed on the work method for forming the aperture. A plate 6 is placed on the work 1000 shown in Fig. 1, the plate covers at least a part of the stopper 2 and the tip 1 and has a portion to come into contact with the tip 1 and the stopper 2 being a plane. Further, on the plate 6, a presser 7 is placed. A force F is applied to the presser 7 is placed. A force F is applied to the presser 7 in the central axis of the tip 1 and thereby the plate 6 moves toward the tip 1. Compared with a contact area of the tip 1 to the plate 6, a contact area of the stopper 2 to the plate 6 is a few hundreds to a few ten thousands times greater. Therefore, the applied force F is dispersed by the stopper 2 and consequently the

displacement of the plate 6 becomes smaller. Stated otherwise, the stopper 2 constitutes means for controlling the formation of the aperture in the tip 1 by dispersing the force applied by the presser 7. Since the displacement of the plate 6 is small, the amount of plastic deformation applied to the opaque film 3 is very small. Additionally, the tip 1 and the stopper 2 only receive a very small plastic deformation. A way to apply the force F is such that a weight having a predetermined weight is raised to a predetermined distance to free-fall it or a spring having a predetermined spring constant is mounted on the presser 7 to press the spring with a predetermined distance. As a material for the plate 6, a metal such as Al, Cr, Au and W, a dielectric such as SiO₂, SiN and diamond, a semiconductor material such as Si, Ge and GaAs, ceramics materials or a material transparent in the range of visible light is used. Particularly, in the case that the plate 6 is made of a material harder than the opaque film and softer than the tip 1 and the stopper 2, a force that is applied to the tip 1 and the stopper 2 is absorbed by the plate 6 and thus the displacement of the plate 6 becomes smaller. The amount of plastic deformation of the opaque film 3 is made smaller easily.

Paragraph beginning at line 13 of page 15 has been amended as follows:

Fig. 3 depicts a state in which the plate 6 and the presser 7 are removed after the force F has been applied. The amount of plastic deformation of the opaque film 3 is very small and the tip 1 and the stopper 2 are deformed only in a plastic deformation region. Therefore, an aperture 8 is formed at the point of the tip 1. The size of the aperture 8 is from about a few nanometers to the extent of the diffraction limit of the optical wavelength of the light passing through the tip 1. Additionally, in the description mentioned above, the plate 6 is inserted between the presser 7 and the work 1000. however, it is needless to say that the plate 6 is removed and the work 1000 is directly pressed by the presser 7 to similarly form the aperture 8. In order to enter a light to the aperture 8, the substrate 4 is etched from the side opposite to the side where the tip 1 is formed to expose a the transparent product layer 5 or at least a part of the tip 1 and thereby an entrance for light to the aperture 8 is formed. Furthermore, ~~it goes without saying it is understood~~ that if the substrate 4 is ~~configured~~ made of a transparent material 103, ~~and thereby~~ a process for forming the entrance for light can be omitted.

Paragraph beginning at line 7 of page 16 has been amended as follows:

In order to form the aperture by the method as set forth above, the difference between the heights H1 and H2 shown in Fig. 1 is recommended to be equal to or below 1000 nm. That is, the tip 1 may be higher than the stopper 2 or vice versa. Furthermore, the tip 1 and the stopper 2 may have the same height. Besides, in order to prevent the tip 1 or the stopper 2 from being damaged, the force F is recommended to be set smaller. In order to form the aperture by a small force F, the difference between the heights H1 and H2 is preferably equal to or under 100 nm. At this time, the stopper 2 ~~are~~ is preferably higher than the tip 1.

Paragraph beginning at line 11 of page 29 has been amended as follows:

Here, one example of the method for fabricating the near field optical head in the embodiment 2 described in Fig. 11 will be explained with reference to Figs. 14A to 14F. Figs. 14A to 14F depict cross-sectional views ~~of A-A'~~ along line 14-14 in Fig. 11. First, a transparent material is selected for a substrate 51 (Fig. 14A). Glass, quartz or an optical material transparent in the region of ultraviolet light, visible light and infrared light is suitable.

Particularly, the case of selecting a quartz substrate will be described here.

Paragraph beginning at line 19 of page 51 has been amended as follows:

~~Also,~~ Furthermore, according to the embodiment 4, the configuration adding the aperture formation mechanism to the information recording/reading apparatus can substantially improve the reliability of the overall apparatus with some increases in costs for the aperture formation mechanism.

Paragraph beginning at line 24 of page 51 has been amended as follows:

~~Besides,~~ Moreover, the near field optical head is incorporated into the information recording/reading apparatus without forming the aperture when fabricating the near field optical head and then the aperture can be formed by the aperture forming part.